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AUTHOR	Millett, John D.
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ABSTRACT

In a state government approach to providing support for higher education, there are at least three essentials or a technical nature as opposed to a policy nature. These three technical essentials are discussed in detail in terms of the practice and experience in Ohio. The essentials include: (1) program differentiation, (2) level of instruction differentiation, and (3) expenditure data related to both program and level of instruction. (Author/MJM)

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STATE BUDGETING FOR HIGHER EDUCATION

General Session Address
to the College and University
Machine Records Conference

by

John D. Millett
Chancellor, Ohio Board of Regents

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In a state government approach to providing support for higher education, there are at least three basic essentials of a technical nature as opposed to a policy nature. These three technical essentials are: (1) program differentiation, (2) level of instruction differentiation, and (3) expenditure data related to both program and level of instruction. I wish to discuss all three of these essentials in some detail in terms of our practice and experience in the State of Ohio.

Before turning to these technical aspects of state budgeting for higher education, let me elaborate somewhat upon the distinction I wish to make here between the technical and the policy concerns of state budgeting. To most persons interested in higher education, the policy issues are the vital issues, and I quite agree with this opinion. For governors, members of the General Assembly, taxpayers, students, parents, and others, the important matters to be resolved are the scope of educational activities to be performed, access to and opportunity for higher education, the magnitude of state

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financial support and the resultant state tax burden, the distribution of the tax burden among various categories of taxpayers, the pricing policy to students and other consumers of higher education services, and the quality of higher education service provided. These are all very important, even exciting issues. But it is not my intention to consider any of these policy questions at this time.

There is a prior condition, I insist, for the consideration of any policy issue today, and that prior condition is the careful analysis of all the available facts which bear upon that policy issue. So also, the consideration of all the ramifications of state appropriation policies affecting higher education depend upon the careful analysis of expenditure objectives and expenditure experience. There can be no budgeting worthy of the name which is not founded upon a planning, programming, expenditure analysis sequence.

Here I would add another important factor in state appropriation practice. In most states of the United States there are multiple institutions of public higher education. Without tracing the varied history state by state of the organizational arrangements to meet state needs for higher education, we may note that in many states over a considerable period of time there emerged by 1940 a state university, a state college of agriculture and mechanic arts, several state teachers colleges, and local junior colleges. There was a

certain logic in the hierarchy of this organizational structure. After 1945 the character of this structure was profoundly changed by the pressures of the veterans' bulge in enrollments, later by the great enrollment deluge of the 1960's, and by the enlarged role of public higher education in American life. The consequence has been that almost every state government has been confronted with demands for increased support of many different public colleges and universities, most of which aspired to or assumed the status of a comprehensive state university. State governmental budgeting then faced the necessity for the equitable distribution of state appropriation support among these numerous and somewhat different, expanding, public institutions of higher education.

I must insert one further preliminary item relevant to the interest of this audience. The kind of budgeting endeavor which I shall describe in general terms here would be impossible without the assistance of electronic data processing. Our first tentative efforts in the 1950's at improved budgeting procedure here in Ohio undertaken through a voluntary cooperation of the then existing state universities were hampered by the inability to obtain and to process the required data. And in those days there were six state universities and an enrollment of 90,000 students to handle. Today there are 12 state universities, one state medical college,

and 42 two-year campuses with an enrollment of over 290,000 students from which to collect necessary data! There could be no state government budgeting with any precision today without the contribution of machine records and of those who man our data processing. In Ohio higher education, as in so many phases of our social life today, the technology of data processing has made possible the degree of affluence in goods and services which we now enjoy.

The first technical essential in higher education budgeting is program differentiation. One of the simplest facts of higher education is one which is frequently overlooked. The instructional activity of higher education embraces many different kinds of programs, with different objectives, different enrollments, different procedures, and, of course, different cost requirements. I have been arguing for a good many years that no meaningful comparison can be made of one college with another, of one university with another. The only basis of comparison from one institution of higher education to another is in terms of the same or similar instructional programs which they may offer.

For our present discussion I should make it clear that I am considering only the instructional activities of institutions of higher education. I am not including in this discussion budgeting for research projects, budgeting for public services, budgeting for auxiliary services, and budgeting for

student aid. All of these are important budgeting concerns of a college or university, but they are not the focus of my attention here. There is a good reason for my concentration upon budgeting for instruction, a good reason besides the simple fact that 55 percent of all expenditures of institutions of higher education does go for the objective of student instruction. That good reason is that for public institutions of higher education from 60 to 80 percent of the cost of student instruction comes from state appropriations; another part of that good reason is that from the point of view of state government today about 80 percent of state appropriations for higher eudcation are directed specifically to student instruction.

A good many different efforts are being made today to construct an adequate taxonomy of higher education instructional programs. The Ohio Board of Regents has confronted this problem as must every administrative agency involved with higher education. If an agency is to develop a uniform information system and a rational budgeting formula, then a particular taxonomy must be decided upon and must be utilized. An administrative agency with a budget job to do today cannot afford to agonize for a considerable period of time over an ideal classification of instructional programs.

The Ohio Board of Regents early decided upon a particular taxonomy of instructional programs as the basis for its

information system and its budgeting activity. We employ a taxonomy of instructional programs which encompasses four basic categories:

Technologies

Arts and Sciences

Professional

Graduate Professional

Within these four basic categories we have provided for 46 program entities. It would be easy to proliferate this number to twice as many, but without doing a grave injustice to any specialized field of study, we concluded that information and expenditure data about these 46 instructional programs would be sufficient for the analytical needs of the Ohio Board of Regents. I have no defense to offer for this particular taxonomy except to assert that it is generally reasonable and useful. It has so proven itself in actual practice. For your information, I append herewith the details of this taxonomy of instructional programs.

We believe that we have achieved the first technical requirement for our budgeting endeavor here in Ohio, that is, program differentiation for the instructional activities of the public institutions of higher education in this state.

OHIO BOARD OF REGENTS TAXONOMY OF INSTRUCTIONAL PROGRAMS

Technologies

- Business
- Health
- Engineering
- Natural Science
- Public Service

Arts and Sciences

- Languages
- English
- Philosophy
- Speech
- History
- Economics
- Geography
- Political Science
- Psychology
- Sociology-Anthropology
- Biological Sciences
- Chemistry
- Geology
- Physics
- Mathematics
- Interdisciplinary
- General Education

Professional

- Agriculture
- Allied Medical
- Architecture
- Art
- Business Administration
- Computer Science
- Education
- Engineering
- Drama and Dance
- Home Economics
- Journalism
- Library Science
- Military Science
- Music
- Nursing
- Pharmacy
- Physical Education
- Public Administration
- Social Work

Graduate Professional

- Dentistry
- Law
- Medicine
- Optometry
- Veterinary Medicine

The second technical essential for state budgeting for higher education is differentiation among instructional programs by level of instruction. It is simply not adequate in any analysis of higher education to rely exclusively upon a taxonomy of instructional programs by subject matter fields. It is indispensable to have also an analysis based upon level of instruction. All of us are well aware that there exists in American higher education at least four distinct and different levels of instruction. These are: (1) the two-year programs leading to an associate degree; (2) baccalaureate programs leading to the bachelor's degree; (3) master's programs leading to the master's degree; and (4) doctoral programs leading to the doctor's degree.

I would add a fifth level of program differentiation to these more or less traditional four, the graduate professional level of instruction. Here the Board of Regents has recognized the unique characteristics of the instructional programs which lead to such degrees as the Doctor of Dental Surgery, the Juris Doctor, the Doctor of Optometry, the Doctor of Veterinary Medicine, and the Doctor of Medicine. These professional fields of study are different from other professional fields in that they make use of distinctive degree designations and have a single level of instruction beyond the baccalaureate.

The obvious importance of program differentiation by

level of instruction seems too evident to warrant any discussion. And yet I am continually surprised to observe how many sets of instructional data are collected by governmental and other agencies which make use of program classifications but fail to make use of classifications by level of instruction.

One of the definite trends in higher education in recent years has been the increasing division of knowledge specialization and utilization into distinctly different levels of competency. One hundred years ago American higher education consisted almost entirely of one subject matter area, the arts and sciences, and one level of study, the baccalaureate. But during the past one hundred years higher education has embraced specializations of knowledge and skills into various professional fields and at various levels, especially the two-year level and the master's level and the doctoral level. The number of students enrolled both at the two-year level and at the post-baccalaureate level has greatly increased, particularly since 1945. These trends cannot be ignored in budgeting practice.

The Ohio Board of Regents has adopted a six-fold taxonomy of levels of instruction. These are: (1) technical education, (2) general studies, (3) baccalaureate, (4) master's, (5) doctoral, and (6) graduate professional. We believe that this six-fold classification of levels of instruction is indispensable

to our budget practice. It recognizes the sequential process in the study of various fields of knowledge with differing expectations in the utilization of that knowledge from the role of the professional associate to the highest level of professional competence in research and instruction.

Let me illustrate the application of this differentiation by reference to levels of instruction in the arts and sciences. In any discipline of the arts and sciences -- I shall use my own discipline of political science as an example -- there are four possible levels of instruction. These are the general study level, the baccalaureate level, the master's level, and the doctoral level. The general study level would be offered at a two-year campus and would also be offered as a part of a baccalaureate program on a four-year campus. The master's level program and the doctoral level program would be offered at a university.

The general studies program in political science is intended to introduce a college student to the basic concepts of behavioral science and of moral philosophy applicable to an understanding of man's political institutions. In some colleges and universities this has been referred to as the core curriculum. It will usually consist of a general introductory course and then introductions to the primary specializations in the discipline, such as American political institutions, comparative political institutions, international

relations, and political theory.

The baccalaureate program would offer a number of specialized courses within these more general subject matter areas, such as courses in American political parties or American public administration, government in the United Kingdom or Russian government, the international relations of the United States and Latin America or concepts of international law, and Greek political thought or the political thought of Twentieth Century United States.

A master's degree program would probably offer the same kind of courses as those available to baccalaureate students, but now the objective and the procedure would be somewhat different. The purpose would be to assist the student in obtaining a mastery of the subject matter content appropriate to an instructional role, especially at the general studies level of teaching, and the procedure would involve extensive reading and review of the monographic literature in the field of study.

A doctor's degree program would seek to encourage the student to develop his or her analytical abilities in the field of special interest and to master the research technique or techniques needed to advance knowledge in the field.

In the professional fields of study such as agriculture or engineering, there are today three levels of instruction offered by some universities: baccalaureate, master's, and

doctoral. In at least one of the technologies, engineering technology, there are two levels of study today, a technical education or two-year level, and a baccalaureate level of study for a bachelor's degree in industrial technology.

It appears to me that in the great expansion of American higher education which has been taking place since 1945, too little attention has been given to the clear and explicit definition of program objectives and to the implementation of these objectives through curriculum construction and the instructional process. I have had the feeling at various times in the past eight years that our budget practice was leading the way toward improved instructional planning, rather than building upon a comprehensive planning process already undertaken by our various colleges and universities.

We believe that we have achieved the second technical requirement for our budgeting endeavor here in Ohio, that is, differentiation among instructional programs by level of instruction for the public institutions of higher education in this state.

The third technical requirement for state budgeting has been the development and the analysis of expenditure data by program and by level of instruction. As I have already mentioned, we utilize 46 categories in our classification of instructional programs and six different levels of instruction. Not every college or university will, of course, offer

all 46 programs and all six levels of instruction. Ohio State is the only university which will come close to these numbers, with the University of Cincinnati being a close second.

I shall not summarize here the procedures which are employed to obtain and to analyze these expenditure data. You will understand when I say that it is an extensive effort in which the fullest cooperation is necessary from administrative officers, faculty members, and the data collecting staff. In turn, the staff of the Board of Regents with the assistance of consultants and of the Data Processing Division of the State Department of Finance has developed the analytical system which produces the desired data outputs. I need not tell you either that any systems analyses on the scale which we have attempted here in Ohio takes time to develop and perfect. After six years of effort, we are only now convinced that we have moved from a highly doubtful set of data to a fairly reliable set of data.

I have just been going through the expenditure analysis of instructional programs by instructional level for our 13 senior institutions and our 42 two-year campuses for the current fiscal year 1971-72. You may be interested if I share some of my observations about these data with you and if I make some comment about how they will be utilized in presenting appropriation alternatives to the Governor for his consideration in preparing a state budget for Ohio for the

next biennium 1973-1975.

Within the general category of instructional expenditure, our system of analysis isolates eight sub-items of cost:

Faculty salaries

Faculty support

Instructional services

Libraries

Student services

General expense

Plant operation

Administration

On a composite basis, we find the percentage distribution among these component parts of instructional cost to be as follows:

Faculty salaries	48
Faculty support	17
Instructional service	3
Libraries	4
Student services	4
General expense	5
Plant operation	14
Administration	5
	100

On a composite basis, accordingly, we find 72 percent of the total instructional budget devoted to the direct

costs of instruction: faculty salaries, faculty support, instructional services, and libraries. We find 28 percent of the total instructional budget required by overhead: student services, general expense, plant operation, and administration. In making these calculations, it must be emphasized that overhead costs attributable to research, public services, and auxiliary services have been allocated to these activities.

In general, we are inclined to believe that any performance which keeps overhead costs under 35 percent of total instructional expense indicates an efficient operation. It is notable that on a composite basis 72 percent of total instructional expense is devoted to direct costs of instruction. We believe that this represents a considerable achievement and is worthy of commendation. But then I should add that appreciation is a commodity in very short supply in the realm of higher education.

As I examine the data about expenditure experience, I must point to the weakest single procedure in our analysis. The sad fact is that universities and even two-year campuses are not accustomed as yet to prepare budgets or to report expenditures on a program basis. Budgets and expenditures are prepared on a department by department basis. In order to overcome this deficiency, it is necessary for the Board of Regents to ask each institution for a faculty service

report. This reporting remains unsatisfactory.

We ask each faculty member to report what proportion of his instructional load is devoted to the various levels of instruction offered by his or her department. There are at least two major complications in this procedure. Most faculty members do not identify their instructional activity in terms of program level. At best they may distinguish between undergraduate and graduate instruction, but beyond this single distinction many faculty members simply do not recognize a difference between general studies and baccalaureate courses at the undergraduate level or a difference between master's degree courses and doctor's degree courses at the graduate level. In addition, some faculty members regard any kind of service report as an invasion of privacy. Why information about official duties performed in a publicly supported university should be regarded as an invasion of privacy is beyond my own personal power of comprehension. This is particularly true at a time when faculty members generally considered themselves underpaid for the activities they perform. I do not understand how compensation and accountability can be separated one from the other in university service or in the public service.

As I review our expenditure analysis, I note that there is clear evidence of an economy of scale. When we compare the cost experience of one institution with that of another

institution, when we compare the cost experience of one program with that of another program, we find that the larger the enrollment, the less is the cost per student. Insofar as overhead costs are concerned, the larger the university, the more likely are overhead costs per student to fall well within our 35 percent guideline. Moreover, the larger the enrollment in an instructional program, the more likely is the expenditure per student to fall at the lower part of a rank order. There are other considerations affecting cost, to be sure, but none is quite so obvious as the factor of enrollment size.

I think this impact of enrollment size upon institutional costs deserves special consideration. We hear a great many complaints from some students today that our public universities are too large and hence too impersonal and bureaucratic. In addition to the simple fact that enrollment growth provided many students with their access to higher education, what these complaints ignore is the element of cost. For many institutions enrollment growth meant also reduced expenditures per student. Reduced expenditures constituted an economy to both taypayers and students.

This circumstance of the inter-relationship of enrollment growth and expenditure experience is important today for an additional reason. As some universities confront the upper limit of their planned or specified enrollment size, growth

can no longer be a factor in meeting future increases in expenditure. If salaries are to increase 5.5 percent per year -- and this seems to be the current expectation -- then these salary additions can only be accomplished by means of a corresponding increase in expenditures per student or by increased productivity in instructional services per student. Several of our public universities have been confronting this kind of budget limitation in the current biennium, and the resulting reappraisal of budget priorities has been agonizing indeed.

From this brief look at experience then, let us look forward to considerations involved in the utilization of these data. As I indicated earlier, a major objective in a state budget system for higher education has been equity in the distribution of state government resources available for the support of higher education. This objective of equity has been sought through the equal distribution of appropriations for instruction to each institution according to equal needs. These equal needs have been determined according to full-time equivalent student enrollment within the different instructional programs differentiated by level of instruction. In order to arrive at this equal need, it is necessary to determine expenditure requirements by programs and by level of instruction. Obviously this expenditure need must be based upon expenditure experience.

I have already implied that expenditure experience will vary considerably among individual institutions of higher education. Apart from differences in expenditure which arise from the factor of enrollment size, we find that there are differences, also, which are inherent in the nature of program offerings. These differences arise from two factors primarily: the student-faculty ratio in an instructional program and the average faculty compensation appropriate to a program.

The importance of the student-faculty ratio to instructional cost should require no elaboration. The larger the student-faculty ratio, such as 24 students to one full-time equivalent faculty position, the less will be the instructional expenditure per student. The smaller the student-faculty ratio, such as 6 students per one full-time faculty position, the greater will be the instructional expenditure per student. But equally important with this factor of the student-faculty ratio is the factor of average faculty compensation. The larger the faculty compensation, the higher will be the expenditure per student.

I speak of the compensation appropriate to the program offering simply because there are well known differences in average salary expectation among faculty members. In some professional fields, such as medicine, dentistry, and engineering, faculty compensation will be related to the general state of professional earnings and the supply of individuals

competent to perform instructional duties. Similarly, within the disciplines of the arts and sciences, the supply of faculty members competent to offer doctoral degree instruction may vary considerably from the supply of faculty members competent to offer instruction in general studies.

There are certain other variations in cost among instructional programs. Some programs may make extensive use of audio-visual materials; others may not. Some programs may require expensive adjunct services such as a broadcasting studio or a theater; and others may not. Some programs require extensive library use and others may not. Plant operations expenditures are influenced by the extent to which students and faculty members make use of specialized laboratories and similar facilities. And, of course, costs are influenced by the extent to which faculty members are provided support through secretaries and stenographers, laboratory assistants, grading assistants, and travel funds. I am also convinced that costs are affected by the circumstance whether or not an institution is predominantly residential insofar as its student body is concerned. I believe it is more expensive in student services and plant operations to maintain a residential college or university as contrasted with a commuting college or university, although some administrators of commuting institutions tell me I am wrong about this.

But I repeat the most important inherent cost differences among instructional programs arise from the student-faculty ratio and the average faculty compensation. To some extent these inherent differences are reflected in the expenditure experience of various institutions of higher education, along with differences reflecting enrollment size.

The accommodation of institutional expenditure differences is a major problem in state governmental budgeting for higher education. Some institutions insist that the appropriations should recognize and provide for differences, but no one has ever provided me with a reasoned, objective, and moral argument why state government should discriminate among public institutions of higher education in like circumstances offering like instructional programs.

The procedure of the Ohio Board of Regents confronted with this problem has been to construct eight model instructional budgets differentiated by program and by level of instruction categories. A model instructional budget is not an ideal budget. Rather, it is generalized approximation of existing expenditure patterns, adjusted for changes in salary and price expectations. And here again, let me emphasize that such a model budget would be impossible without machine record processing.

The eight categories of instructional programs brought together in our budget models are:

General Studies

Technical Education

Baccalaureate General Programs (Arts and Sciences, Teacher Education, and Business Administration)

Baccalaureate Professional Programs

Master's Degree Programs

Doctoral Degree Programs

Graduate Professional Programs

Medical Programs

We use just these eight program categories because we think the groupings have an internal logic, and because eight categories are about as many as can be effectively explained to public and legislative audiences. To use more than these eight categories may create more confusion and misunderstanding than can be readily clarified.

From what I have already indicated, you will gather that two of the important parts of a model expenditure budget are the faculty instructional load calculation which establishes the number of faculty positions needed and the average faculty compensation calculation which establishes the cost for each such position. To this particular calculation must be added cost factors for faculty support, instructional services, library services, student services, general expense, plant operation, and administration. We have found it feasible and desirable to express these cost factors in terms of expenditures

per FTE student. For student services, general expense, and administration we establish a cost figure which varies only slightly by program. For faculty support, instructional services, library services, and plant operation we establish a cost figure which is intended to recognize the different needs of different programs.

I can illustrate both the concept of a model budget and actual expenditure experience for 1971-72 by three examples: general studies, baccalaureate professional, and doctoral programs. The differences between the model expenditure pattern and the actual expenditure pattern of public universities in their composite reflects differences in internal budgeting, and no doubt some differences in budget reporting. But the model budget constitutes a guide, and only a guide, in the decision making process of each individual institution.

One other consequence of this state budget process should be mentioned. The model expenditure budget affords both the chief executive of the state and the two finance committees of the General Assembly with the basis for an important policy decision. That decision is the one which must be made about the relevant proportions of a total expenditure budget for instruction which is to be borne by the state and which is to be borne by the student. I would argue that this is a vital policy decision, and the budget process should be so devised as to present this decision clearly and precisely for

EXPENDITURES PER FTE STUDENT

1971-72

	General Studies		Baccalaureate Professional		Doctoral Programs	
	Model	Composite	Model	Composite	Model	Composite
Departmental Instruction						
Faculty Compensation	$504	$405	$1,287	$1,110	$2,950	$3,060
Faculty Support	126	110	273	420	1,280	1,180
Instructional Services	40	30	60	90	200	210
Library Service	70	70	90	70	200	160
Student Services	100	95	100	90	110	45
General Expense	80	95	80	95	80	95
Plant Operation	150	170	250	360	400	500
Administration	70	45	80	120	80	260
	$1,140	$1,020	$2,200	$2,355	$5,300	$5,510

executive-legislative determination.

It may be argued, of course, that there is nothing sacred about any particular model expenditure budget for instruction. This is certainly true. But whenever any of the component parts of such a model budget are altered, both the chief executive and the legislature should understand what changes they are making and what the consequences of any particular change will be, such as a decrease in faculty compensation, an increase in the student-faculty ratio, a decrease in library service, or an increase in plant operation cost. There may be reasons for any such increase or decrease, but the reasons ought to be clear. Even more importantly, it is essential to know upon the basis of actual experience whether or not the change is in fact an increase.

I do not wish to suggest we have solved all the budgetary problems for higher education here in Ohio. We still have many issues to resolve. Although the approach to the model expenditure patters has been incremental, I would wish sometime it might be actually heroic in magnitude. Although we have established a process, I wish our data base were fully reliable and that we could have confidence in the complete reliability of the expenditure information provided to us. These are ambitions still to be realized.

I can claim, I think, two characteristics for our budget process here in Ohio. It does achieve substantial equity in

the distribution of such state support as is available for the instructional activities of the public institutions of higher education. And the process does make use of a set of financial data carefully analyzed in accordance with prescribed definitions. The data can be analyzed, thanks to the miracle of electronic data processing. In accordance with the lingo of the machine records specialist, I wish there was no garbage in the data inputs. Pollution remains to be eliminated in our machine records operations even as elsewhere in our environment!